FEMA

Levees and the National Flood Insurance Program

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Summary of Presentation

- **NFIP Background, Flood Maps, and the Mapping Process**
- **Levees and Flood Maps, 44 CFR 65.10, and Procedures Memo 34**
- **Implications**
- **Other Efforts and What's Next**
- **Risk Basics**
- **Conclusion**

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The National Flood Insurance Program

- **The NFIP has three main parts**
  - **Mapping – the identification of the flood hazard (probability)**
  - **Floodplain management – the use of building practices aimed at reducing flood damage (lowering consequences)**
  - **Insurance – a way of reducing economic impacts**
- **Framework**
  - **Federal government assumes financial risk by providing insurance**
  - **Local governments agree to reduce future damages through floodplain management**
  - **Together flood maps are made**

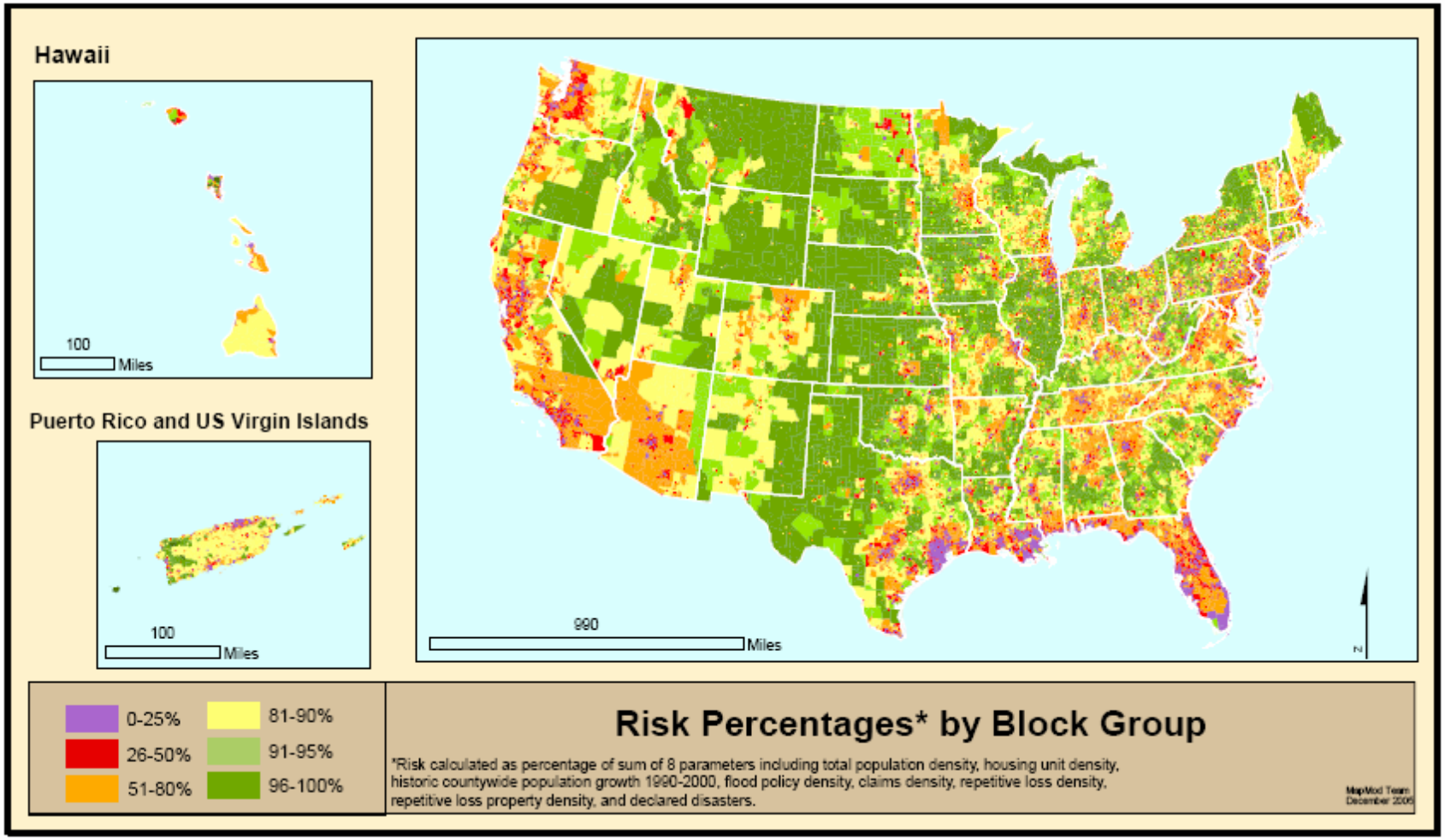
Flood Maps

- **Display areas where floods have *at least* a 1% chance of occurring in any given year**
- **Why *at least* ?**
  - **The probability is 1% at the floodplain boundary only**
  - **Odds get worse as you move down and toward the flooding source**
  - **The probability is *nearly* 100% in a stream channel**
- **Nothing is certain in statistics**
- **For ease of administration a single line is drawn despite fact that probability is greater closer to flooding source**

Map Modernization

- **Nationwide effort to update the nations Flood Insurance Rate Maps**
- **Estimated cost ~$1 billion**
- **Estimated completion 2010**
- **Current projected status by FY06 close (Oct ’06)**
  - **~50% of population with draft maps**
  - **~25% with final maps**
- **Focus of effort in areas of highest risk**
- **Cost schedule details at county level annually (MHIP)**

Where is Flood Risk Greatest?



Flood Mapping Process

- **FEMA makes draft (or preliminary) maps in coordination with state and local governments**
- **Draft or preliminary maps are issued, notice of changes proposed is released (about 1 year from start)**
- **Three month statutory appeals period begins – public involved**
- **Close coordination with state and local governments**

Flood Mapping Process

- **Basis of appeal must be scientific or technical**
- **Appeals (if any) reviewed and resolved via agency choice:**
  - **Coordination/Consultation with local government**
  - **Independent 3rd party**
  - **Administrative law judge**
- **Final Determination and six month compliance period begins after appeals resolved**
- **Total Process ~ 2 to 3 years from start**

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Levees and Flood Maps

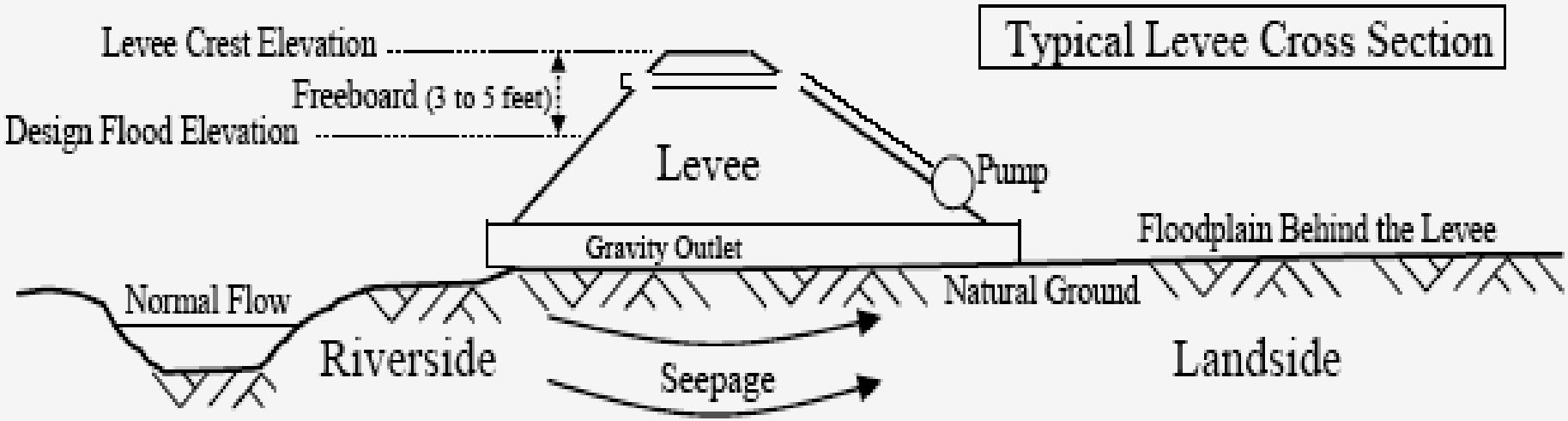
- **Generally levees are either**
  - **Accredited – shown on flood map as providing protection from base flood (some rainfall ponding typical)**
  - **Not-Accredited – shown on flood map as not providing protection from base flood**
- **Rules for mapping areas protected by levees were codified in Federal Regulation (44CFR 65.10) in 1986**
- **Levee must "meet and continue to meet" minimum design, operation, and maintenance standards consistent with 1% flood to be accredited**

44 Code of Federal Regulations – 65.10

- **For a levee to be shown as providing protection from the 1% flood, FEMA must have documentation demonstrating:**
  - **It is designed to withstand forces associated with the 1% annual chance flood (height, stability, and embankment protection)**
  - **It has adequate freeboard (e.g. levee height is 3-4 feet above design flood stage)**
  - **All closure devices function properly – no weak links or holes**
  - **Operation and Maintenance plans are adequate and in place**
  - **Interior drainage systems (pumps and canals) are functioning**

44 Code of Federal Regulations – 65.10

Anatomy of a Riverine Levee System



What does it mean to "certify" a Levee?

- **44 CFR 65.2 (b)**
- **Is NOT a "…warranty or guarantee of performance…"**
- **It is a statement that**
  - ***Data* is accurate (to best knowledge of certifier)**
  - ***Analyses* were "…performed correctly and in accordance with sound engineering practice…"**
  - ***Design* is in accordance with "…sound engineering practices…"**

Who certifies a levee?

- **Not FEMA**
  - **FEMA accredits the levee by showing it as providing protection against the base flood after all requirements of 65.10 are met**
- **"…supplied to FEMA by the community or other party seeking recognition…"**
- **Operations and Maintenance plans must be under the "…jurisdiction of a Federal or State agency, and agency created by Federal or State law, or an agency of a community participating in the NFIP…"**

Interim Levee Guidance – Procedure Memorandum 34

- **Issued on August 22, 2005**
- **Reinforces Existing Regulations (44 CFR 65.10)**
- **Supplements Procedure Memo's 30 and 32**
  - **Memo 30 – Identification of Levees Using Database**
  - **Memo 32 – Levee Review Protocol (revised by Memo 34)**
- **Directs map producers to identify levees early in process**
- **Provides a Flow Chart for Interim Guidance**
  - **Outlined a process to ensuring FEMA provided current flood hazard data**

Procedures Memo 34

- **What it didn't do:**
  - **Add additional requirements to groups outside FEMA or the USACE that were not already required in existing regulations or statutes**

Why 65.10 and Memo 34?

- **The consequences of flooding behind levees (no matter the cause) is generally catastrophic**
- **It make sense to have standards given the risk and exposure to the public and the National Flood Insurance Program (NFIP)**
- **Clarity was needed as Map Modernization DFIRM production began in earnest**

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Implications

- **Accredited Levees**
  - **People within the accredited area may think they:**
    - Can't flood
    - Don't need insurance
  - **The Truth:**
    - They can flood
      - "stuff" happens: pumps fail, blockages, design criteria exceeded, gates don't close, people don't or can't evacuate in time
    - They do need insurance and it's cheap and significantly reduces risk by reducing individual exposure (e.g. the financial consequences if something does happen)

Implications

- **Non-Accredited Levees**
  - **People may think:**
    - This is a federal or state issue
    - The only solution is to “fix the levee”
  - **The Truth:**
    - It’s a shared issue: home/business owner to Feds
    - Solution must consider multiple facets balancing
      - Economics (short and long term)
      - Environment and impacts to neighbors
      - Technical constraints
      - Legal Issues

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Other FEMA/USACE Levee Efforts

- **FEMA established Interagency Levee Policy Review Committee**
  - **Purpose: to look into challenges and recommend changes to improve how FEMA maps areas where levees impact flood hazard – stay tuned…**
- **USACE tasked to inventory and assess National Levee Status in cooperation with FEMA**
  - **Multi-year effort which may link to National Levee Safety Program**
  - **Foundation is a national levee database**
- **USACE and FEMA working to identify nations critical levees**
  - **Focus – GIS technology, population centers, known problem levees, levees in danger of decertification**

What's Next?

- **We are working hard, in coordination with the USACE, to develop levee mapping procedures that:**
  - **Recognize, without delay:**
    - Levees that clearly meet the requirements
    - Levees that clearly do not meet the requirements
  - **Provide adequate time for those seeking recognition to acquire the data needed while allowing the mapping process to move forward without significant delays**
  - **Is truthful and honest about the risk and uncertainties**

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Risk

Risk = Probability x Consequences

- **Probability is the percent chance of something happening in a given time period (generally measured as a percentage)**
- **Consequences can be economic loss, loss of life, loss of habitat (generally measured as $ or loss of life)**

Risks – Example 1

- **Home or Business 1**
  - **Probability**
    - The chance of getting flooded is 15% in any given year
  - **Consequences**
    - The damage caused by the flooding that has a 15% chance of occurring is $10,000
- **Risk = 15% x $10,000 = $1,500**

Risks – Example 2

- **Home or Business 2**
  - **Probability**
    - The chance of getting flooded is 10% in any given year
  - **Consequences**
    - The damage caused by the flooding that has a 10% chance of occurring is $15,000

- **Risk = 10% x $15,000 = $1,500**

The Point

- **Home 1 and Home 2 have the *same risk* even though Home 1 is more likely to flood in any given year (it has a 15% chance versus 10%)**
- **The good news:**
  - **Risk can be reduced for things out of an individuals control by taking steps to reduce the CONSEQUENCES**
- **The bad news:**
  - **Risk can increase without an individual knowing because the PROBABILITY of something happening can increase without their knowledge**

What it means

- **Levees reduce the *probability* of flooding in a given area they DO NOT eliminate it**
- **Individuals and communities behind levees can reduce their flood risk significantly by focusing energy on reducing *consequences*:**
  - **Have a plan and heed warnings to evacuate**
  - **Purchase flood insurance – even if it isn't legally required**
  - **Implement sound floodplain management requirements for new construction – even for areas outside the "FEMA floodplain"**

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Conclusion

- **The NFIP and Map Modernization are**
  - **Providing data to help people understand flood risk in and around levees**
  - **More importantly – They are driving healthy dialog about flood risk and how to reduce it using layered approaches**
- **Procedure Memo 34 emphasized importance of following long standing federal regulations for accrediting levees under the NFIP – the only new requirements were placed on our Regions**
- **FEMA and the USACE are working closely together to ensure missions are aligned**
- **Public safety (not flood insurance implications) must drive decision making**

Conclusion

- **The *probability* of flooding literally changes with the weather and the physical condition of the watershed – both of which are dynamic and outside the direct control of any one individual or entity**
- **Regardless, flood risk can be significantly reduced NOW by focusing on reducing the *consequences* of flooding:**
  - **Assess the chances of flooding objectively and acknowledging that flooding behind many levees is not just possible over the short term but probable over the long term**
  - **Heed evacuation warnings and having a plan**
  - **Buy flood insurance to reduce financial exposure**
  - **Be smart about where your build, how strong, and how high**

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